

What is claimed is:

1. A magnetic steering angle detection apparatus,
comprising:

5 a magnet rotating in synchronization with a steering
shaft mounted on a vehicle; and

a magnetic sensor mounted on a column side, the magnetic
sensor configured to detect a rotation angle of the steering
shaft by sensing a change of a magnetic field emitted from
10 the magnet,

wherein the magnet has S and N poles arranged on a plane
of which normal line is in a substantially axial direction
of the steering shaft; and

the magnetic sensor is disposed such that a sensing
15 direction thereof is set to be a substantially single
direction and the sensing direction is made to substantially
coincide with the axial direction of the steering shaft.

2. A magnetic steering angle detection apparatus,
20 comprising:

a first gear rotating in synchronization with a steering
shaft mounted on a vehicle;

a second gear rotating in synchronization with the first
gear at a speed faster than a speed of the first gear;

25 a third gear rotating in synchronization with the first
gear at a speed slower than a speed of the second gear;

magnets rotating in synchronization with the second

and third gears, respectively;

magnetic sensors provided on column sides and in vicinities of the magnets of the second and third gears, respectively, the magnetic sensors configured to sense
5 changes of magnetic fields from the magnets of the second and third gears; and

a computation unit configured to compute a rotation angle of the steering shaft by detecting rotation angles of the second and third gears based on sensing signals from the
10 magnetic sensors,

wherein each of the magnets provided on the second and third gears has S and N poles arranged on a plane of which normal is in a substantially axial direction of the steering shaft; and

15 each of the magnetic sensors is disposed such that a sensing direction thereof is set to be a substantially single direction and the sensing direction is made to substantially coincide with the axial direction of the steering shaft.

20 3. The magnetic steering angle detection apparatus according to claim 1, wherein the magnetic sensor is provided on a position where a component of the magnetic field from the magnet in the axial direction of the steering shaft is detectable.

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4. The magnetic steering angle detection apparatus according to claim 2, wherein the magnetic sensors are provided on

positions where components of the magnetic fields from the magnets in the axial direction of the steering shaft are detectable.

5 5. The magnetic steering angle detection apparatus according to claim 1, wherein the magnetic sensor is a hall IC formed of a plurality of hall elements.

6. The magnetic steering angle detection apparatus according
10 to claim 2, wherein the magnetic sensors are hall ICs, each of which is formed of a plurality of hall elements.